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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/841,156

04/25/2001

Shunpei Yamazaki

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EXAMINER

DOTY, HEATHER ANNE

ART UNIT

PAPER NUMBER

2813

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/841,156

Applicant(s)

YAMAZAKI ET AL.

Examiner

Heather A. Doty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14, 19, 23-45, 47, 48, 50, 51 and 53-70 is/are pending in the application.
- 4a) Of the above claim(s) 23-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 19, 23-45, 47, 48, 50, 51 and 53-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the Remarks filed 9/15/2006.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada et al. (U.S. 6,280,559; hereinafter Terada) in view of Bando (U.S. 5,276,999) and Nomura et al. (U.S. 6,320,309).

Regarding claim 9, Terada discloses forming a plurality of light-emitting elements **34**, at the front surface of a substrate 1, the substrate being formed of, *inter alia*, glass or polymeric material (Fig. 4; column 15, lines 41-51); polishing a back surface of the first substrate by a grinding method to thereby reduce the thickness to, *inter alia*, 75 μm , which is less than 300 μm (column 26, lines 38-41); and bonding a color filter **35** adjacent the light-emitting element, the color filter made from a transparent substrate **37** with color filter layers/elements **47** (red), **48** (green), and **49** (blue—column 18, lines 65-66) thereon at the surface of the first substrate opposite to the light-emitting elements **34** (column 26, lines 45-61).

Terada does not name the grinding as “chemical mechanical polishing” and does not teach forming a light-emitting element emitting red light, a light-

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emitting element emitting green light, and a light-emitting element emitting blue light.

However, Bando teaches chemical mechanical polishing of substrates (column 5, lines 25-30) for the high flatness required of displays (see column 1, lines 6-12).

Therefore, at the time of the invention, it would have been obvious for one of ordinary skill in the art to polish the substrate, both front and back, of Terada because Bando teaches that high flatness is required for light-emitting displays, such as that in Terada.

Further, Nomura et al. teaches forming a light-emitting element emitting red light, a light-emitting element emitting green light, and a light-emitting element emitting blue light, along with a corresponding red color filter, green color filter, and blue color filter located adjacent the red light-emitting element, green light-emitting element, and blue light-emitting element, respectively (phosphor layers r, g, and b and color filters R, G, and B in Fig. 3). Nomura et al. teaches that this device layout is an alternative to having a single light-emitting layer that emits in a wide spectral band (such as the white light-emitting element taught by Terada) adjacent a red color filter, green color filter, and blue color filter (column 7, lines 1-9).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the method taught by Terada and Bando together, and further substitute a red light-emitting device, a green light-emitting device, and a blue light-emitting device adjacent to each of Terada's red, green,

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and blue color filters, respectively, for the light-emitting device taught by Terada, since Nomura et al. teaches that it is an acceptable alternative to having a single broad-spectrum light-emitting element and a red color filter, green color filter, and blue color filter.

Regarding claim 55, Terada, Bando, and Nomura et al. together teach the method according to claim 9. Nomura et al. further teaches that screen printing can be used to form the light-emitting elements (column 5, lines 59-61).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the method taught by Terada, Bando, and Nomura et al. together, and further use screen printing to form the light-emitting elements, since Nomura et al. teaches that this is a suitable method for such an application.

Claims 10 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada et al. (U.S. 6,280,559; hereinafter Terada) in view of Bando (U.S. 5,276,999) and Nomura et al. (U.S. 6,320,309) and further in view of Yoneda et al. (U.S. 6,392,340).

Regarding claim 10, as explained above, the prior art of Terada in view of Bando and Nomura et al. discloses each of the claimed features except forming a thin film transistor. Yoneda et al. teaches that it is known in the art for each light-emitting element to be electrically connected to a thin-film transistor (i.e., a semiconductor element), TFT (column 1, lines 14-43).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to electrically connect a TFT to each of the light-emitting

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devices taught by the combination of Terada, Bando, and Nomura et al., as further taught by Yoneda et al., in order to have independent control over each device and thereby form a more efficient, effective display.

Regarding claim 58, Terada, Bando, Nomura et al., and Yoneda together teach the method according to claim 10. Nomura et al. further teaches that screen printing can be used to form the light-emitting elements (column 5, lines 59-61).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the method taught by Terada, Bando, and Nomura et al. together, and further use screen printing to form the light-emitting elements, since Nomura et al. teaches that this is a suitable method for such an application.

Claims 11, 12, 14, 19, 47, 48, 50, 51, 61, 64, 67, and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada in view of Bando and Nomura et al. and further in view of King et al. (U.S. 4,963,788; hereinafter King) and considered with the article by Stuart M. Lee, entitled "Lunar Building Materials – Some Considerations on the Use of Inorganic Polymers" for a showing of inherency only for dependent claims 14, 19, 48, and 51.

The prior art of Terada in view of Bando and Nomura et al., as explained above, discloses each of the claimed features except for bonding a polarization plate (claims 11 and 12) or anti-reflective film (claims 47 and 50) to the transparent substrate of the color filter.

King discloses a thin-film electroluminescent display and is therefore drawn to the same endeavor as is Terada. King teaches that contrast can be improved by providing a polarizer or antireflective coating on the viewer's side surface (i.e. the front side surface) of the display—in spite of the attenuation in luminescence (King, column 1, lines 28-42 and especially column 5, lines 9-17).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to bond an antireflective coating or polarizer to the front surface of the display taught by the combined teachings of Terada, Bando, and Nomura et al.—i.e. the transparent substrate **37** of the color filter taught by Terada—in order to improve the contrast, as taught by King.

Regarding claims 14, 19, 48, and 51, Terada teaches that an exemplary transparent substrate **37** material of the color filter is glass (column 24, lines 22-24). Glass is inherently a polymeric material (see Lee article—especially the first line of the second page—for validation).

Regarding claims 61, 64, 67, and 70, Terada, Bando, Nomura et al., and King et al. together teach the methods according to claims 11, 12, 47, and 50. Nomura et al. further teaches that screen printing can be used to form the light-emitting elements (column 5, lines 59-61).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the method taught by Terada, Bando, and Nomura et al. together, and further use screen printing to form the light-emitting elements, since Nomura et al. teaches that this is a suitable method for such an application.

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Claims 47, 48, 49, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada in view of Bando and Nomura et al. and further in view of Matthies et al. (U.S. 6,476,783; hereinafter Matthies) and considered with the article by Stuart M. Lee, entitled "Lunar Building Materials – Some Considerations on the Use of Inorganic Polymers" for a showing of inherency only for dependent claims 14, 19, 48, and 51.

Regarding claims 47 and 50, the prior art of Terada in view of Bando and Nomura et al., as explained above, discloses each of the claimed features, except for bonding an antireflection film to the transparent substrate.

Matthies teaches a method of improving contrast to an EL display and is therefore drawn to the same endeavor as is Terada. Matthies teaches that the viewer's side surface of the display (i.e. the direction through which the emitted light exits) is always subject to specular reflectance. Matthies teaches one solution to the problem is to bond an antireflective coating on the viewer's side surface (Matthies, paragraph bridging columns 9 and 10).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to bond an antireflective coating to the viewer's side surface of the Terada display—i.e., the transparent substrate 37 of the color filter—in order to remove specular reflectance and thereby improve the contrast, as taught by Matthies.

Regarding claims 48 and 51, Terada teaches an exemplary transparent substrate 37 material of the color filter is glass (column 24, lines 22-24). Glass is

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inherently a polymeric material (see Lee article—especially the first line of the second page—for validation).

Claims 53, 54, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada et al. (U.S. 6,280,559; hereinafter Terada) in view of Bando (U.S. 5,276,999) and Nomura et al. (U.S. 6,320,309), as applied to claims 9 and 10 above, and further in view of Bao et al. (U.S. 6,252,253; hereinafter Bao).

Regarding claims 53, 54, 56, and 57, Terada and Bando and Nomura et al. together teach the method of claims 9 and 10 (see above), but do not expressly teach that at least one of the red, green, or blue light-emitting elements is formed by deposition using a shadow mask or an ink-jet method.

Bao teaches forming a red light-emitting element using a shadow mask, an ink-et method, or a printing method. Bao expressly teaches that any of these methods is suitable for forming such a light-emitting element (column 8, lines 44-48).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the method taught by Terada, Bando, and Nomura et al. together, and further use a shadow mask deposition, an ink-jet method, or a printing method to form either the red, blue, or green light-emitting element, since Bao teaches that these are suitable methods.

Claims 59, 60, 62, 63, 65, 66, 68, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada, Bando, Nomura et al. and

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King et al. as applied to claims 11, 12, 47, and 50 above, and further in view of Bao et al. (U.S. 6,252,253; hereinafter Bao).

Regarding claims 59, 60, 62, 63, 65, 66, 68, and 69, Terada, Bando, Nomura et al., and King together teach the method of claims 11, 12, 47, and 50 (see 35 U.S.C. 103(a) rejection above), but do not expressly teach that at least one of the light, green, or blue light-emitting elements is formed by deposition using a shadow mask or an ink-jet method.

Bao teaches forming a red light-emitting element using a shadow mask, an ink-et method, or a printing method. Bao expressly teaches that any of these methods is suitable for forming such a light-emitting element (column 8, lines 44-48).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use the method taught by Terada, Bando, Nomura et al., and King together, and further use a shadow mask deposition, an ink-jet method, or a printing method to form either the red, blue, or green light-emitting element, since Bao teaches that these are suitable methods.

Response to Arguments

Applicant's arguments with respect to claims 9-12, 14, 19, 47, 50, 51, and 53-70 have been considered but are moot in view of the new ground(s) of rejection.

This action has been made non-final to allow Applicant to respond to the new grounds of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather A. Doty, whose telephone number is 571-272-8429. The examiner can normally be reached on M-F, 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

had


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